9. (Twice Amended) The transistor of claim 5, wherein the first sector is separated from the source region and from the drain region by substantially equal distances.

REMARKS

Prior to this Response, the application was examined and an Office Action was issued, mailed August 31, 2000.

In the Office Action,

claims 1-4 were withdrawn from consideration.

claims 5-7 and 9 were rejected.

In this Response:

Claims 5-7 and 9 are now pending in the present application. Reconsideration is requested based on the following remarks.

MPEP 714.12 states any amendment that will place the case either in condition for allowance or in better condition for appeal may be entered.

Claim rejections 35 USC 103(a)

Claims 5-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacDougall et al. ("MacDougall") in view of admitted prior art.

The Examiner states that MacDougall teaches, in figure 1, source and drain regions 11, 12 of a second conductivity type formed in the substrate and defining a channel region therebetween, an impurity implantation region of impurities of a *second* conductivity type in a first sector of the channel region, the first sector not reaching either one of the source and drain region and being separated therefrom by equal distances, wherein the channel region *exclusive* of the first sector has a uniform doping concentration of the *first* conductivity type.

On the contrary, MacDougall does *not* teach or disclose the channel region *exclusive* of the first sector having a uniform doping concentration of the *first* conductivity type with the first sector being the *second* conductivity type.

MacDougall is directed to precisely controlling the threshold voltage of transistor by lightly implanting impurity ions into a channel region extending from a source region to a drain region, not just a portion of the channel region. See col. 2, lines 5-29 and col. 2, lines 58-59.

In other words, in MacDougall, dopants are introduced into the whole channel region between the source and drain of the transistor. The introduction of dopants is accomplished by masking all other transistors and exposing the unmasked gate insulator and underlying channel. See col. 2, lines 10-17 and col. 6, lines 2-10.

With the methods suggested or described in MacDougall, the dopants should be introduced into the whole channel region, not just a portion thereof.

Thus, MacDougall does not disclose or suggest a channel region *exclusive* of the first sector having a uniform doping concentration of the *first* conductivity type with the first sector being the *second* conductivity type.

Importantly, if the ion implantation is performed to form a first sector of the channel region having a *second* conductivity type, and if the channel region *exclusive* of the first sector has a uniform doping concentration of the *first* conductivity type, the threshold voltage cannot be precisely controlled as attempted by MacDougall.

In contrast, in one embodiment of the present invention, to achieve the open drain structure without the p-type impurity-ion-implantation process for opening the channel, the gate 56 is formed to have a little longer length W3 than the conventional length W2 of FIG.2. Thus, the n-type impurity implantation region 54 is formed only at the certain portions of the channel region such that the region "O" becomes a p-channel region where the channel lacks the n-type impurity implantation region 54. See the specification at page 6, lines 24-28. This is nowhere shown or suggested in MacDougall.

For these reasons, in MacDougall, reference number 6 rather refers to a whole channel region, not just a portion of the channel region. There is no indication in MacDougall that the dotted line is the range of the first sector in the direction of the channel width.

Although the dotted line extends along only a portion of the channel, it appears that it merely indicates the existence of the channel region, perhaps its depth, but certainly not its extent in any direction. In any event, MacDougall's channel is described as extending all the way between the source and drain regions. If MacDougall had meant to characterize the channel's true shape and extent, he would have used something other than a dotted line.

Therefore, MacDougall, when fairly read, does not teach or suggest the first sector not reaching either one of the source and drain region and being separated therefrom by equal distances *and* a channel region *exclusive* of the first sector having a uniform doping concentration of the *first* conductivity type with the first sector being of the *second* conductivity type.

Thus, claim 5 is allowable and claims 6-7 and 9, which depend therefrom are also allowable.

In conclusion

Applicant respectfully submits that each of the Examiner's rejections have been overcome and that this Application is in condition for allowance. Such is respectfully requested.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231

Date: November 30, 2000

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